ACCESSION #: 9310190157
LICENSEE EVENT REPORT (LER)

FACILITY NAME: PILGRIM NUCLEAR POWER STATION PAGE: 1 OF 13

DOCKET NUMBER: 05000293

TITLE: Loss of Preferred Offsite Power and Automatic Scram
Resulting From Load Rejection at 100 Percent Power
EVENT DATE: 09/10/93 LER #: 93-022-00 REPORT DATE: 10/12/93

OTHER FACILITIES INVOLVED: N/A DOCKET NO: 05000

OPERATING MODE: N POWER LEVEL: 100

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR SECTION:
50.73(a)(2)(iv)

LICENSEE CONTACT FOR THIS LER:
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COMPONENT FAILURE DESCRIPTION:
CAUSE: SYSTEM: COMPONENT: MANUFACTURER:
REPORTABLE NPRDS:

SUPPLEMENTAL REPORT EXPECTED:

ABSTRACT:

On September 10, 1993, at 1134 hours, a simultaneous loss of preferred offsite power and an automatic scram resulting from a load rejection occurred during a fast moving electrical storm while at 100 percent reactor power. The loss of preferred offsite power included an automatic start of Emergency Diesel Generator (EDG) 'B'. EDG 'A', in service for surveillance testing and loaded on its safety related bus, remained in service. The load rejection included a trip of the Turbine-Generator and opening of three Main Steam relief valves.

The loss of preferred offsite power and load rejection was caused by separate lightning strikes that caused the opening of switchyard breakers. One of the 345 KV switchyard air type circuit breakers (ACB 105) was struck by lightning. Corrective actions taken included a walkdown of the switchyard. Except for the replacement of an ACB 105 pressure reducing valve solenoid and surge suppression circuit, no corrective action was necessary as a result of the walkdown. The unit returned to commercial service at 0718 hours on September 12, 1993.

This event occurred during power operation with the reactor mode selector switch in the RUN position. The RV pressure was 1035 psig with RV water temperature at 550 degrees Fahrenheit. This report is submitted in accordance with 10 CFR 50.73(a)(2)(iv). This event posed no threat to the public health and safety.

END OF ABSTRACT

BACKGROUND

The Auxiliary Power Distribution System (APDS) consists of six 4160 VAC buses. The APDS is divided into emergency service (Buses A5 and A6) and normal service (Buses A1, A2, A3, A4). Buses A5 and A6 supply power to essential loads required during normal operations and abnormal operational transients and accidents. Buses A1, A2, A3, A4 supply power to other station auxiliaries during planned operations. Power is distributed to the six 4160 VAC buses during normal operation from either the unit source (Unit Auxiliary Transformer) or the preferred offsite source (Startup Transformer). The preferred power source is used to supply the 4160 VAC buses during normal startup and shutdown. After the main generator has been synchronized to the 345 KV transmission system, the 4160 VAC buses are transferred from the Startup Transformer (SUT) to the Unit Auxiliary Transformer (UAT). The 4160 VAC emergency service Buses A5 and A6 can also be supplied from the standby power source (Emergency Diesel Generators 'A' and 'B'), the secondary power source (Shutdown Transformer), or the Station Blackout Diesel Generator (Bus A5 or Bus A6). Located at the end of this report is a simplified single line diagram of the switchyard including the air type circuit breakers (ACBs) and 345 KV transmission lines. Not depicted on the drawing are the three lightning masts/arrestors located in the switchyard.

On September 10, 1993, at approximately 0700 hours, ACB 103 was tagged and removed from service for maintenance. For the tagout, ACB 103 was in the closed position with its control circuit de-energized, the ACB 103 stuck breaker cutoff switch was in the OFF position and the breaker's mechanical disconnecting switches were in the open position.

At 1027 hours, a lightning induced disturbance on a portion of the 345 KV transmission line 342 remote from the switchyard caused trip signals to

line 342 protective relaying and switching devices. The trip signal resulted in the automatic opening of ACB 104 and remote switching devices at the Canal Station and Auburn Street portions of line 342. The fault cleared in approximately 4.5 cycles (0.075 seconds) and line 342 re-energized. Initial attempts by Pilgrim Station Operations personnel to reclose ACB 104 were unsuccessful and Maintenance and Systems personnel were notified to investigate the opening of ACB 104. Meanwhile, actions were initiated to clear the tagout of ACB 103. The on-shift Operations personnel conducted a briefing regarding actions to be taken if a loss of offsite power were to occur.

Just prior to the event, plant operating conditions included the following:

o The reactor mode selector switch was in the RUN position. The reactor was at 100 percent power. The Reactor Vessel (RV) pressure was 1035 psig with the RV water temperature at approximately 550 degrees F. The RV water level was approximately inches.

o The Recirculation System motor-generator sets/pumps 'A' and 'B' were in service with each loop in the local manual control mode. Reactor core flow was approximately 67 million pounds per hour. The Condensate System and Feedwater System pumps were all in service. The Feedwater Level Control System was in the three element control mode.

o The 345 KV transmission lines 342 and 355 were energized. ACB 103

was out of service in the closed position with its control circuit de-energized, the ACB 103 stuck breaker cutoff switch in the off position, and the mechanical disconnects open. ACB 104 was open. The line 355 portion of the switchyard ring bus was energized with ACBs 102 and 105 closed. The 4160 VAC Auxiliary Power Distribution System (APDS) was energized from the UAT with the bus transfer switches in the ON position. The Shutdown Transformer was in standby service with the 23 KV distribution system energized.

o The Emergency Diesel Generator (EDG) 'A' was operating and loaded on Bus A5 in the droop control mode for surveillance testing. EDG 'B' was in standby service.

o Safety-related Bus B6 was energized from Bus A5 via 480 VAC Bus B1.

o The Reactor Protection System (RPS) Buses 'A' and 'B' were energized from Bus A3/B3 and Bus A4/B4, respectively.

o The Main Turbine auxiliary oil pumps 'A' and 'B' were in standby service.

EVENT DESCRIPTION

On September 10, 1993, at 1134 hours, a simultaneous loss of preferred offsite power and an automatic Reactor Protection System (RPS) scram signal and scram occurred during a fast moving electrical storm while at 100 percent reactor power. The scram signal occurred as a result of a load rejection. The event was initiated when ACBs 102 and 105 automatically opened as a result of a lightning strike to ACB 105.

The opening of ACB 105, in conjunction with ACB 104 in the open position, isolated the Main Transformer from the switchyard and resulted in the consequent load rejection. The opening of ACB 105, in conjunction with ACB 104 in the open position, also resulted in the automatic opening of the 4160 VAC feeder breakers connecting the UAT to the APDS. The opening of ACB 102, in conjunction with the ACB 103 mechanical disconnecting switches in the open position, resulted in the loss of offsite power to the SUT. The nonsafety-related 4160 VAC Buses A1, A2, A3, A4 and emergency Bus A6 and related loads became deenergized as a result of the opening of the UAT-APDS feeder breakers and undervoltage trip of the SUT-APDS feeder breakers due to the loss of power to the SUT. Emergency 4160 VAC Bus A5 and related loads remained energized via EDG 'A' that automatically transferred from the droop control mode to the isochronous control mode.

The loss of power to Bus A1 and A2 de-energized the motors of the Condensate and Feedwater Systems pumps and resulted in a loss of feedwater flow to the RV. The loss of power to Bus A3 and A4 de-energized equipment including:

o The motors of the Turbine auxiliary oil pumps. This resulted in the loss of oil pressure to and eventual closing of the Turbine Bypass Valves.

o The drive motors of the Recirculation System loop 'A' and 'B' motor-generator sets. This resulted in the loss of forced circulation in the RV.

o The motors of the Circulating Water System Train 'A' and 'B' pumps. This resulted in a loss of seawater flow to and the heat sink function of the Main Condenser.

o 480 VAC Buses B3 and B4 and related electrical loads including RPS Buses 'A' and 'B'.

The opening of ACB 105, with ACB 104 open, resulted in a sudden mismatch between Generator load (zero) and Turbine power (100%). The mismatch resulted in a rapid acceleration of the Turbine-Generator and trip of the acceleration relay. The trip included the following responses:

o Loss of oil pressure to pressure switches (PS-37/38/39/40) that resulted in the RPS scram signal (load rejection) that initiated the scram.

o Automatic closing of the Turbine Control Valves, Stop Valves, and Combined Intermediate Valves. The Main Steam/RV pressure rapidly increased because the steam flow exceeded the 25% total bypass capability of the Turbine Bypass Valves. The pressure rapidly increased to approximately 1122 psig.

The pressure increase to greater than the RPS high pressure setpoint (calibrated at approximately 1065 psig) resulted in a scram signal. The pressure increase also caused the Target Rock two-stage Main Steam relief valves RV-203-3B (pilot s/n 1048)/3C (pilot s/n 1046)/3D (pilot s/n 1208) to lift for pressure relief. Relief valves RV-203-3B and -3C closed approximately five seconds after lifting. Relief valve RV-203-3D closed approximately 22 seconds after lifting.

o The three hydraulically-operated Turbine Bypass Valves initially opened but gradually closed because the Main Turbine shaft driven oil pump pressure gradually decreased and the Turbine auxiliary oil pumps 'A' and 'B' could not start.

o Trip of the Turbine lockout relay (286-2).

The loss of power to Bus A6 resulted in an automatic start of EDG 'B' and Bus A6 and related electrical distribution system were re-energized.

The loss of power from RPS Buses 'A' and 'B' resulted in the de-energization of related equipment including some normally energized AC powered relays that are part of the Primary Containment Isolation Control System (PCIS) and Reactor Building Isolation Control System (RBIS).

The PCIS actuation resulted in the following designed responses:

o Automatic closing of the inboard and outboard Primary Containment System (PCS)/Reactor Water Sample isolation valves AO-220-44 and-45.

o Automatic closing of the inboard and outboard PCS Group I/Main Steam Isolation Valves (MSIVs).

o Automatic closing of the inboard and outboard PCS Group 2 isolation valves that were open.

o The PCS Group 3/Residual Heat Removal (RHR) System Shutdown Cooling

suction piping isolation valves MO-1001-47 and -50 remained closed.

o The PCS Group 3/RHR System Low Pressure Coolant Injection mode valves MO-1001-29A/B remained closed.

o The PCS Group 6 (six)/Reactor Water Cleanup (RWCU) System isolation valves closed automatically.

The RBIS actuation resulted in the automatic closing of the Reactor Building/Secondary Containment System (SCS) Trains 'A' and 'B' supply and exhaust ventilation dampers and automatic start of the SCS/Standby Gas Treatment System (SGTS) Trains 'A' and 'B'.

Meanwhile, the RV water level decreased in response to the scram and RV pressure increase that resulted in a decrease in the void fraction in the RV water. The RV water level eventually decreased to approximately -34 inches. The decrease in RV water level to less than the low RV water level setpoint (calibrated at approximately inches) resulted in trip signals to the RPS and portions of the PCIS and RBIS that had already actuated.

Initial Control Room operator response was orderly and included the following. The reactor mode selector switch was moved to the SHUTDOWN position in accordance with procedure 2.1.6, "Reactor Scram". EOP-01 (Rev.1) was entered because the RV water level was less than inches. The de-energization of Buses A1, A2, A3, A4, A6 and start of EDG 'B' and re-energization of Bus A6 were noted.

The RV pressure gradually increased after the relief valves closed. At 1134 hours and at a RV pressure of 1049 psig, relief valve RV-203-3C was

manually opened and closed approximately 12 seconds later. At 1135 hours and at a RV pressure of 1021 psig, relief valve RV-203-3D was manually opened and closed approximately eight seconds later.

The Reactor Core Isolation Cooling (RCIC) System was manually started in the injection mode for RV water level control and the High Pressure Coolant Injection (HPCI) System was put into service in the full flow test mode for RV pressure control at 1135 hours. This action was taken in accordance with EOP-01 because the MSIVS, that would normally be open, were closed and the Turbine Bypass Valves, that would normally operate to provide a steam pathway from the Main Steam piping to the Main Condenser, were closed. The RHR System was put into service in the Suppression Pool Cooling (SPC) mode because of the expected addition of heat from the HPCI and RCIC turbine exhaust steam.

At 1144 hours, ABC 102 was closed and the SUT was re-energized via line 355. Buses A1, A2, A3, and A4 re-energized because the respective SUT-APDS feeder breakers closed automatically.

At 1150 hours, the Circulating Water System pump 'A' was started to re-establish the Main Condenser as a heat sink.

EOP-03 (Rev. 1) was entered at 1151 hours because the Suppression Pool temperature was 80 degrees F due to the addition of steam from operations of the relief valves, and HPCI and RCIC Systems. The Suppression Pool bulk water temperature ultimately reached 97 degrees F.

At 1155 hours, the Condensate System pump 'A' was started.

The RV pressure was 890 psig and decreasing by 1157 hours. By 1203 hours, the lockouts of the Recirculation System motor generator (M-G) sets were reset. The M-G sets/pumps were not started to re-establish forced circulation in the RV because the RV steam dome-to-drain line differential temperature was greater than the temperature (145 degrees F) specified by Technical Specification 3.6.A.5 by the time the reset activities were completed.

By 1216 hours, RPS Buses 'A' and 'B' were re-energized from Buses A3/B3 and A4/B4, respectively.

The RCIC System was returned to standby service at 1219 hours with RV water level at inches.

At 1220 hours, the Feedwater System pump 'A' was started for RV water level control.

The RWCU/Group 6 portion of the PCIS was reset at 1222 hours and the RWCU recirculating pump 'A' was subsequently returned to service.

Procedure 2.1.7 (Rev. 30), "Vessel Heatup and Cooldown", was initiated at 1225 hours.

At 1231 hours, the H sub 2/O sub 2 System train 'A' was put into service in accordance with EOP-03.

The letdown of water from the Suppression Pool to the Radwaste System via the RHR System SPC mode commenced at 1233 hours.

At 1235 hours the RBIS was reset. The Reactor Building ventilation system and SGTS were subsequently returned to normal service.

The verification of the insertion of all control rods was completed by 1236 hours.

At 1253 hours, and after reducing the differential pressure across the MSIVs in accordance with Procedure 2.2.92 (Rev. 26), "Main Steam Line Isolation and Turbine Bypass Valves", the outboard MSIVs AO-203-2A/B/C/D were opened. The outboard steam line 'A' MSIV AO-203-2A position lights indicated an OPEN and CLOSED position and the valve was reclosed. The inboard MSIV, AO-203-1A, was tagged closed in accordance with Technical specification 3.7.A.2.b. The other inboard MSIVs AO-203-1B/C/D were opened. The opening of the MSIVs re-established a flow path from the RV to the Main Condenser when the Turbine Bypass Valves were opened for RV pressure control at 1258 hours.

The HPCI System was removed from service at 1302 hours.

At 1312 hours, the RPS was reset.

At 1327 hours, EOP-01 was terminated because the RX water level was greater than inches, the heat sink function of the Main Condenser had been re-established, and the Condensate-Feedwater System was maintaining RV water level. EOP-03 was terminated at 1359 hours because the Suppression Pool temperature was less than 80 degrees F and decreasing with no heat input. The H sub 2/O sub 2 System was subsequently returned to normal standby service.

The RBIS was manually actuated at 1420 hours as part of preparations for transferring the source or power for Buses A5 and A6 to the SUT. The RHR System was removed from service in the SPC mode. The RWCU/Group 6 isolation valves were closed and the source of 480 VAC power to safety-related swing type Bus B6 was transferred from Bus B1 to Bus B2.

The source of power to Bus A5 was transferred from EDG 'A' to the SUT. Bus B6 was transferred from Bus B2 to B1. EDG 'A' was removed from service at 1454 hours. The source of power to Bus A6 was transferred from EDG 'B' to the SUT at 1459 hours and EDG 'B' was removed from service.

By 1507 hours, the PCIS was reset and the RWCU System was returned to service. The RBIS was reset and the Reactor Building ventilation system and SGTS were returned to normal service by 1510 hours.

At 1512 hours, the RHR System loops 'A' and 'B' were restarted in the SPC mode.

The Feedwater System pump 'A' was removed from service at 1545 hours.

At 1633 hours, the reactor mode selector switch was moved from the SHUTDOWN position to the REFUEL position for instrument checks.

The HPCI System and RCIC System isolated due to low steam pressure at 1755 hours, and 1809 hours, respectively.

At 2120 hours one RHR System Loop 'B' pump was started in the shutdown cooling (SDC) mode. The second Loop 'B' pump was started in the SDC mode

at 2138 hours.

The reactor was in a cold shutdown condition with the RV head vent valves open by 2208 hours.

Problem Report (PR) 93.9389 was written to document the scram. The NRC Operations Center was notified in accordance with 10 CFR 50.72 at 1241 hours on September 10, 1993. Several Problem Reports were written to document other aspects or observations related to the event.

A post trip review of the event was initiated in accordance with procedure 1.3.37 (Rev. 8), "Post Trip Reviews".

A followup notification to the NRC Operations Center was made at 1510 hours on September 10, 1993, to update the earlier notification regarding the loss of offsite power.

CAUSE

The cause of the initiating RPS scram signal was a load rejection at 100 percent reactor power. The load rejection was caused by the opening of ACB 105 with ACB 104 open.

ACB 105 opened automatically due to a lightning strike to ACB 105 that was witnessed by personnel in the switchyard area. ACB 104 was open when ACB 105 opened. ACB 104 had opened automatically at 1027 hours due to a lightning strike on a portion of transmission line 342 remote from the switchyard. The initial attempts for reclosing ACB 104 were unsuccessful

because the ACB 103 lockout relay 86/3, which if actuated inhibits the closing of ACB 104, was actuated. Lockout relay 86/3 actuated because an ACB 103 stuck breaker condition (i.e., ACB 103 not open) was sensed after a designed time delay of 100 milli-seconds. The operation of the ACB 103 stuck breaker circuit and lockout relay 86/3 was in accordance with design for the configuration existing at the time of the opening of ACB 104. ACB 102 did not open as a result of the ACB 103 stuck breaker circuit operation because the ACB 103 stuck breaker cutoff switch was in the OFF position. The configuration for and tagout of ACB 103 was correct for the work planned.

The cause of the loss of offsite power to the SUT was the opening of ACB 102 while the ACB 103 mechanical disconnecting switches were open. ACB 102 opened automatically because of the lightning strike to ACB 105. The opening of ACB 102 and ACB 105 was in accordance with design for a lightning strike to ACB 105.

The cause of the loss of power to Bus A6 was the opening of the UAT-Bus A6 feeder breaker 152-605 and the opening of the SUT-Bus A6 feeder breaker 152-604 approximately 1.1 seconds after breaker 152-604 closed. The UAT-APDS feeder breakers including breaker 152-605 opened automatically because of the opening ACB 105 with ACB 104 open. The opening of the UAT-APDS feeder breakers with ACB 103 closed and the APDS bus transfer switches in the ON position, permitted the SUT-APDS breakers including breaker 152-604 to close. Meanwhile, the consequent de-energizing of Buses A1, A2, A3, A4 and A6 was sensed by the respective SUT undervoltage relays. A delay of approximately 1.1 seconds is inherent in the undervoltage relays and, therefore, the SUT-APDS breakers

including breaker 152-604 opened approximately 1.1 seconds after closing. EDG 'B' automatically started, due to the loss of preferred offsite power with breakers 152-604 and 152-605 open, and re-energized Bus A6 and the related electrical system.

PR 93.9394 was written regarding breaker 152-604 not automatically recharging after the event. Technical review determined breaker 152-604 operated in accordance with design for this event. The SUT-APDS feeder breakers including the SUT-Bus A5 feeder breaker 152-504 would have operated similarily except that EDG 'A' was loaded onto Bus A5 via breaker 152509 at the time of the event. Breaker 152-504 did not close because breaker 152-509 was closed at the time of the event.

Buses A1, A2, A3, and A4 re-energized automatically when the SUT was re-energized because the transfer switches were in the ON position. The related nonsafety-related electrical loads did not re-energize because the applicable breakers were not closed.

CORRECTIVE ACTION

After the storm, the switchyard was walked down for evidence of damage. Except for an ACB 105 pressure reducing valve, no corrective actions were necessary as a result of the walkdown. PR 93.9391 was written regarding the ACB 105 pressure reducing valve. The ACB 105 pressure reducing valve solenoid and surge suppression circuit were replaced.

The unit returned to commercial service at 0718 hours on September 12, 1993.

SAFETY CONSEQUENCES

The event posed no threat to public health and safety.

The load rejection with subsequent loss of bypass experienced during this event is bounded by the transient analysis described in the Updated Final Safety Analysis Report section 14.4.3, "Generator Load Rejection Without Bypass". The opening of some or all of the Main Steam two-stage relief valves is an expected response to a load rejection with or without bypass at greater than 45 percent power. For this event, relief valves RV-203-3B/C/D opened. The other relief valve RV-203-3A (pilot s/n 1207) did not lift because RV-203-3B/C/D lifted and curtailed the RV/Main Steam pressure increase before the pressure could increase to the setpoint of RV-203-3A.

The Technical Specification 3.6.D.1 setting for the Main Steam System/Pressure Relief System (PRS) relief valves is 1095 to 1115 psig with a tolerance of 11 psi. The setpoint of the relief valves is 1115 psig. Therefore, the setpoint range of the relief valves including tolerance is 1104 psig to 1126 psig. During the event, the highest RV/Main Steam System pressure that occurred was approximately 1122 psig.

The Technical Specification 3.6.D.1 setting for the Main Steam/PRS safety valves is 1240 13 psi. During the event, the highest RV pressure that occurred was approximately 118 psig less than the safety valves' setpoint of 1240 psig.

The scram signal was the designed response to a load rejection with the Turbine first stage pressure at approximately 735 psig which is greater

than the scram bypass setpoint (calibrated at 108 psig 3 psig) corresponding to 25 percent of the normal first stage pressure. The maximum turbine speed that occurred was approximately 1965 RPM and was less than the speed corresponding to the 109% overspeed trip setting of 1972-1998 RPM and 112% backup overspeed trip setting of 2016 RPM.

The decrease in the RV water level was the expected response to the scram and accompanying shrink in the RV water. The PCIS and RBIS actuations were initiated by the deenergization of normally energized relays powered from RPS Buses 'A' and 'B'. The actuations are also the expected designed responses to a low RV water level condition (i.e., less than inches).

The Technical Specification Table 3.2.B trip setting for actuation of the Core Standby Cooling Systems (CSCS) is -49 inches. During the event, the lowest RV water level that occurred (-34 inches) was approximately 12 inches above the CSCS setpoint (calibrated at approximately -46 inches). In addition, the level was approximately 93.5 inches above the level that corresponds to the top of the active fuel zone.

The CSCS consists of the HPCI System, Automatic Depressurization System (ADS), Core Spray System, and RHR/LPCI mode. Although not part of the CSCS, the RCIC System is capable of providing water to the RV for high pressure core cooling, similar to the HPCI System. The ADS is a backup to the HPCI System and functions to reduce RV pressure to enable low pressure core cooling provided independently by the Core Spray System and the RHR/LPCI mode. The CSCS and RCIC System were operable.

The lowest RV water level that occurred was greater than the setpoint (calibrated at approximately -46 inches) that initiates the ATWS System

functions for a Recirculation Pump Trip (RPT) and Alternate Rod Insertion (ARI). The highest RV pressure that occurred was less than the setpoint (calibrated at approximately 1175 psig) that initiates the ATWS System RPT and ARI trip functions and the setpoint (calibrated at approximately 1400 psig) that initiates the ATWS System function for a Feedpump Trip.

The highest RV water level that occurred was approximately inches. The level was less than the level (approximately 112 inches) of the bottom of the Main Steam piping.

The highest Suppression Pool bulk water temperature that occurred was approximately 97 degrees F. The temperature was less than the maximum water temperature (120 degrees F) specified by Technical Specification 3.7.A.1.h during RV isolation conditions.

Technical Specification 3.7.A.1.m specifies the Suppression Pool/Chamber be maintained between -6 to -3 inches which corresponds to a downcomer submergence of 3.00 and 3.25 feet, respectively. The highest Suppression Pool water level that occurred was approximately -3 inches (130 inches on LI/LR-1001-604A/B). The level was less than the level corresponding to the maximum Suppression Pool volume of 94,000 cubic feet specified by Technical Specification 3.7.A.1.b. A Suppression Pool volume of 94,200 cubic feet corresponds to a level of inches (LR-5038/5049) or 139 inches (LI-1001-604A/B). The level was less than the settings of level switches LS-2351A/B that control the Suppression Pool/HPCI pump suction valves.

This report is submitted in accordance with 10 CFR 50.73(a)(2)(iv)

because the actuation of the RPS, although an expected designed response to the load rejection at 100 percent reactor power, was not planned. This report is also submitted in accordance with subpart (a)(2)(iv) because the PCIS and RBIS actuation, although a designed response to the deenergizing of AC powered relays energized from RPS Buses 'A' and 'B', was not planned. In addition, this report is submitted in accordance with subpart (a)(2)(iv) because the EDG 'B' actuation, although a designed response to the loss of preferred offsite power with breakers 152-604 and 152-605 open, was not planned.

SIMILARITY TO PREVIOUS EVENTS

A review was conducted of Pilgrim Station LERs submitted since January 1984. The review focused on LERs submitted in accordance with 10 CFR 50.73(a)(2)(iv) that involved a loss of preferred offsite power, load rejection or similar scram. The review identified load rejection scrams reported in LERs 50-293/85-025-00, 90-008-00, 92-016-00, and 93-004-00. None involved lightning. The review identified losses of offsite power while shut down that were reported in LERs 84-017-00, 86-027-01, 86-029-00, 87-005-00, 87-014-01, 89-010-00, 91-024-00, and 93-010-00. None involved lightning.

A review was also conducted of Pilgrim Station occurrence reports/LERs submitted prior to 1984. The review focused on reports that involved lightning. The review identified four instances of lightning that were reported in LERs 78-035-00, 79-027-00, and 79-033-00, and 83-045-00. LERs 78-035-00, 79-027-00, and 79-033-00 involved load rejection scrams that were caused by lightning. The load rejection scram reported in LER 79-033-00 involved a lighting strike in the 345 KV switchyard. LER 83-045-00 involved a loss of offsite power while shut down that was caused

by lightning.

ENERGY INDUSTRY IDENTIFICATION SYSTEM (EIIS) CODES

The EIIS codes for this report are as follows:

COMPONENTS CODES

Circuit Breaker, AC 52
Relay, Locking-Out (86/3) 86
Switchgear SWGR

SYSTEMS

Condensate System SD
Condenser System SG
Containment Isolation Control System (PCIS, RBIS) JM
Engineered Safety Features Actuation System JE
(PCIS, RBIS, RPS)
Feedwater System SJ
High Pressure Coolant Injection (HPCI) System BJ
Low-Voltage Power System (600V and less) EC
Main Steam System SB
Main Turbine System TA
Medium-Voltage Power System (601V-35KV) EA
Plant Protection System (RPS) JC
Post Accident Monitoring System IP
Reactor Core Isolation Cooling (RCIC) System BN

Reactor Recirculation System AD
Reactor Water Cleanup (RWCU) System CE
Residual Heat Removal System (SPC, SDC Modes) BO
Standby Gas Treatment System (SGTS) BH
Switchyard System (345 KV) FK

Figure omitted.

10 CFR 50.73

BOSTON EDISON
Pilgrim Nuclear Power Station
Rocky Hill Road
Plymouth, Massachusetts 02360

October 12, 1993
BECo Ltr. 93- 130

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Senior Vice President - Nuclear

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, D.C. 20555

Docket No. 50-293

License No. DPR-35

The enclosed Licensee Event Report (LER) 93-022-00, "Loss of Preferred Offsite Power and Automatic Scram Resulting From Load Rejection at 100 Percent Power", is submitted in accordance with 10 CFR Part 50.73.

Please do not hesitate to contact me if there are any questions regarding this report.

E. T. Boulette

DWE/bal

Enclosure: LER 93-022-00

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Standard BECO LER Distribution

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